

Application No. 10/038,342
Attorney Docket No. 07303.0127-00000

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

1-32. (Cancelled)

33. (Currently Amended) An apparatus comprising
a container having a solution of DNA a target molecule and a substrate therein; and
a temperature control system, wherein said temperature control system creates a
temperature gradient in the solution sufficient to produce movement of the DNA target molecule
through the solution towards a surface of the substrate and wherein the temperature gradient is
substantially perpendicular to the surface of the substrate. the movement of the DNA through the
solution is in a direction parallel to the temperature gradient.

34. (Previously Presented) The apparatus of claim 33, further comprising an inlet port
constructed to permit fluid flow into the container and an outlet port constructed to permit fluid
flow out of the container.

35. (Previously presented) The apparatus of claim 33, further comprising an aperture to
permit optical access to the container.

36. (Previously presented) The apparatus of claim 33, wherein the container has a volume of
from about 50 to about 500 microliters.

37. (Previously presented) The apparatus of claim 33, wherein the container is plastic.

38. (Previously presented) The apparatus of claim 33, wherein the temperature
gradient is between about 5°C/mm and 25°C/mm.

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39. (Previously presented) The apparatus of claim 38, wherein the temperature gradient is between about 5°C/mm and 15°C/mm.

40. (Previously presented) The apparatus of claim 39, wherein the temperature gradients is about 10°C/mm.

41. (Currently Amended) The apparatus of claim 33, wherein the temperature gradient is sufficient to cause at least a portion of the solution to be warmer than the remainder of the solution such that at least a portion of the DNA target molecule moves from the warmer portion of the solution to the cooler portion of the solution.

42. (Cancelled)

43. (Currently Amended) The apparatus of claim 33, wherein the DNA target molecule comprises a nucleic acid.

44. (New) The apparatus of claim 33, wherein the DNA target molecule comprises a polynucleotide.

45. (Cancelled)

46. (Cancelled)

47. (Currently Amended) The apparatus of claim 33, wherein the DNA target molecule is labeled with a detectable label.

48. (Previously Presented) The apparatus of claim 47, wherein the detectable label is a luminescent label.

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49. (Previously Presented) The apparatus of claim 47, wherein the detectable label is a fluorescent label.

50. (Previously Presented) The apparatus of claim 33, wherein the container further comprises a port constructed to enable fluid flow into and out of the container.

51. (Previously Presented) The apparatus of claim 47, wherein the detectable label is a primary label.

52. (Previously Presented) The apparatus of claim 47, wherein the detectable label is a secondary label.